DOCUMENT RESUME

ED 169 342 CE 020 527

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TITLE	Agriculture--Forestry Seedlings. Kit No. 53. Instructor's Manual [and] Student Learning Activity Guide.
INSTITUTION	Clemson Univ., S.C. Vocational Education Media Center.; South Carolina State Dept. of Education, Columbia. Office of Vocational Education.
SPONS AGENCY	Office of Education (DHEW), Washington, D.C.
PUB DATE	78
GRANT	SC-5058-76-I-211-0330
NOTE	36p.; For related documents see CE 020 474-566
AVAILABLE FROM	Vocational Education Media Center, 10 Tillman Hall, Clemson University, Clemson, South Carolina 29631 (complete set of modules, 14 filmstrips and cassettes, $260.00; set of 87 student modules, $42.50)
EDRS PRICE	MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS	*Agricultural Education; Behavioral Objectives; *Forestry; Instructional Materials; Learning Activities; *Learning Modules; Occupational Clusters; *Occupational Information; *Planting; Prevocational Education; *Vocational Agriculture

ABSTRACT

An instructor's manual and student activity guide on forestry seedlings are provided in this set of prevocational education materials which focuses on the vocational area of agriculture. (This set of materials is one of ninety-two prevocational education sets arranged around a cluster of seven vocational offerings: agriculture, home economics, distributive education, health occupations, world of work, trade and industry, and office occupations.) The instructor's guide is organized into the following elements: title of activity, duration of activity (three to eleven periods), activity goals, eleven instructional objectives, related vocational clusters, and activity implementation (description, materials needed, safety considerations, teacher preparation prior to class, during the class, follow-up activities, answer key to student check point activities, and masters for duplication [e.g., check sheets, sample application for ordering seedlings]). The student activity guide provides step-by-step instructions (narrative and illustrations) for completing each instructional objective (e.g., write an application to order seedlings, identify five rules for seedling planting, use an increment borer). At the end of each set of instructions is a student check point (evaluation activity). Occupational descriptions for a forester aide, fire ranger, forest worker, and tree planter conclude the document. (JH)

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ED169342

AGRICULTURE – FORESTRY SEEDLINGS

Kit No. 53

INSTRUCTOR'S MANUAL

Prepared by

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Office of Vocational Education
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In Cooperation With

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1978

CE 020 527

These materials have been developed from funds provided by Grant SC-5058-76-I-211-0330 under the Appalachian Regional Development Act Amendments of 1967, Department of Health, Education and Welfare, Office of Education.

TITLE OF ACTIVITY

Kit No. 53, Agriculture – Forestry Seedlings

DURATION

1–6 periods of main activity
1–2 periods after seedling delivery
1–3 periods follow-up activity

GOALS

Students will gain an understanding and appreciation for our natural and managed forests. They will experience hands-on functions of a forest aide and forester. Students will relate to some of the problems of disease and insect infestation which harm this renewable natural resource.

INSTRUCTIONAL OBJECTIVES

Given appropriate information, students will identify nine factors which make forests important.

Given instructions and application form, the student will write an application to order pine seedlings for planting.

Given appropriate instruction, students will identify the proper depth for planting seedlings.

Given appropriate instruction, students will identify 5 rules for planting.

Given appropriate instruction, students will identify 5 common problems in planting seedlings.

Given appropriate instructions, students will list the procedure to be followed in order to heel in seedlings.

Given appropriate instructions and seedlings, the students will establish a stand of forest growth by dibble planting.

Given appropriate instruction, the student will identify 5 insects which attack southern pine trees.

Given appropriate instructions, students will identify diseases which affect southern pine trees.

Given equipment and instructions, students will operate an increment borer.

Given equipment and instructions, students will operate a bark-thickness gauge.

VOCATIONAL CLUSTERS

Office Occupations
Distributive Education
Health Occupations

ACTIVITY IMPLEMENTATION

A. Activity Description

This activity is designed for the fall or early winter of the school year. Students will order pine seedlings and plant a stand of trees. They will also be introduced to the benefits and problems related to forestry.

B. Safety

No special considerations other than normal precautions concerning an out-of-doors activity.

C. Materials Required

1. Audio Visual Equipment
   None
2. Technical Equipment
   5 hard hats
   5 dibbles
   1 increment borer
   1 bark-thickness gauge
3. Expendable Material
   1 stick beeswax
   1 can silicone spray
   1 can black spray paint
   paper and pencils

D. Preparation Prior To Class

Identify an area near the school for pine seedling planting. Ask permission either from school or property owner for this reforestation project. You may wish to contact the Agricultural Conservation Program sponsored by the Department of Agriculture. This may reduce the cost and aid in the operation of this activity.

Reproduce enough masters for all your students. Read through the Student Activity Guide.

E. During Class Session

First Day – Distribute Student Activity Guides. Explain the activity in your own words or use the brief abstract found in Activity Description.

You may wish to talk about the importance of forests and forestry products after the completion of Objective I.

Second Day – Pass out the order blank forms for ordering seedlings. The price list is given here and also in the Student Activity Guide. Impress upon the students that a forester or farmer would follow these same steps.

SEEDLING PRICE LIST
SOUTH CAROLINA
STATE COMMISSION OF FORESTRY
P. O. Box 21707
COLUMBIA, SOUTH CAROLINA 29221

The following seedlings are grown for sale by the S.C. State Commission of Forestry for the 1977-78 planting season.

PAYMENT MUST ACCOMPANY APPLICATION

SPECIES	COST PER *-500	COST PER *-1,000
**Imp. Coastal Lob.	$ 4.50	$ 9.00
Imp. Piedmont Lob.	4.50	9.00
Imp. Slash Pine	4.50	9.00
Imp. Virginia Pine	4.50	9.00
Regular Coastal Lob.	4.00	8.00
Longleaf Pine	4.00	8.00
Table Mountain Pine	4.50	9.00
***White Pine	7.00	14.00
Scotch Pine	9.00	18.00
Yellow Poplar	10.00	20.00
Sweetgum	10.00	20.00
Baldcypress	10.00	20.00
Black Walnut	12.50	25.00

*Add $2.00 per thousand for seedlings delivered to your County Seat by our nursery truck. (Minimum shipping charge is $2.00)

Truck Shipments will be DECEMBER 14-15.

**10,000 Seedling Limit
*** 5,000 Seedling Limit
Minimum order accepted is 500 seedlings of any one species.

Reprint from S.C. Commission of Forestry.

After all students have ordered their seedlings, compile a tally sheet for a master order. Mail the completed order and request a time for delivery.

Since some time must be allowed for the seedlings to be delivered, the class may omit Objectives 6 and 7 until the delivery of the seedlings.

4-6 Days – Proceed with Objective 3. Keep checking on all students' progress. The last two Objectives are outdoor activities, so special care must be taken while the students are out of the classroom.

When seedlings arrive, complete Objectives 6 and 7.

F. Follow-up Activities

1. VIEW Fact Sheet
2. Ask a forestor to come visit your class and explain the merits of the activity and also tell about the forestry vocation.
3. Utilize the science department in analyzing the environmental impact of this activity.

ANSWER KEY

CHECKPOINT I

Unscrambled word letters:
1. reproduction
2. growing
3. protection
4. harvesting
5. marketing
6. forestry
7. fuel
8. shelter
9. food

CHECKPOINT III

B

CHECKPOINT IV

1. Keep roots moist at all times.
2. Place roots in the ground straight, not curled up.
3. Plant seedlings at correct depth.
4. Plant in moist soil and pack firmly around roots.
5. Protect from fire and other injury.

CHECKPOINT V

1. Tangled roots
2. Turned - up roots
3. Air pockets
4. Planted too shallow
5. Planted too deep

CHECKPOINT VI

1. Dig a V-shaped trench, usually in a moist, shady space.
2. Break the bundles of seedlings; spread these evenly in the trench.
3. Fill the trench with loose soil. Be sure to water this area well.
4. The water will allow the soil to settle, so add more soil and tap it down firmly with your foot.

CHECKPOINT VIII

1. Moth
2. Weevil
3. Cone bug
4. Turpentine beetle
5. Southern pine beetle

CHECKPOINT IX

1. Pitch canker
2. Root rot
3. Little leaf
4. Fusiform rust

MASTERS FOR DUPLICATION

VIEW Fact Sheet
Check Sheets
Application for seedlings

VIEW FACT SHEET

NAME _____ CLASS _____ OCCUPATION _____

A. List the advantages (good points) of this occupation (job).

B. List the disadvantages (bad points) of this occupation (job).

C. List three things you should know to do this occupation (job).
1.
2.
3.

D. What type of education should you get to be prepared (do) for this occupation (job)?

E. What courses must you take to go into this occupation (job)?

F. What do you think your future in this occupation (job) will be?

G. What wage can you expect in this occupation (job)?

H. What are the working hours of this occupation (job)?

I. To learn more about this occupation (job), write to:

J. Using a scale of 1 to 5, circle the number that measures your interest in this occupation (job) as a possible career.

I don't like it. ← 1 2 3 4 5 → I like it.

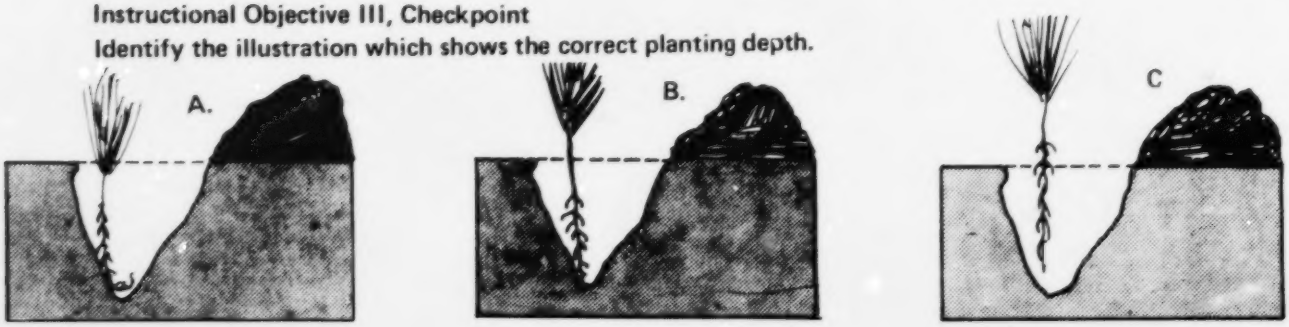
CHECK SHEET

Instructional Objective I, Checkpoint

Unscramble words

1. tropreudnoic _____
2. igngwor _____
3. octorpenit _____
4. gavetsihnr _____
5. temirangk _____
6. esorfyrt _____
7. lfeu _____
8. leterhs _____
9. doof _____

Instructional Objective III, Checkpoint
Identify the illustration which shows the correct planting depth.



Instructional Objective IV, Checkpoint – List 5 rules for successfully planting seedlings.

1. _____
2. _____
3. _____
4. _____
5. _____

Instructional Objective V, Checkpoint – List 5 common problems associated with planting seedlings.

1. _____
2. _____
3. _____
4. _____
5. _____

Instructional Objective VI, Checkpoint – List the steps to follow in heeling in seedlings.

1. _____

_____

2. _____

_____

3. _____

_____

4. _____

_____

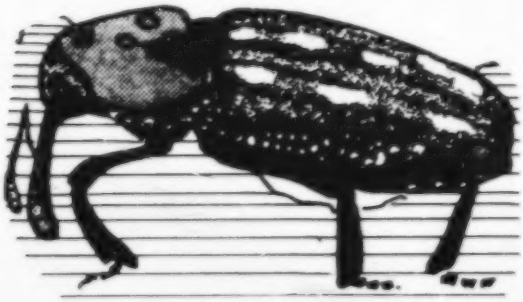
9

CHECK SHEET

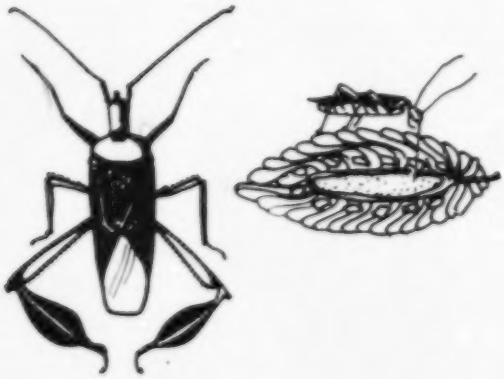
Instructional Objective VIII — Identify these insects.

1. _____

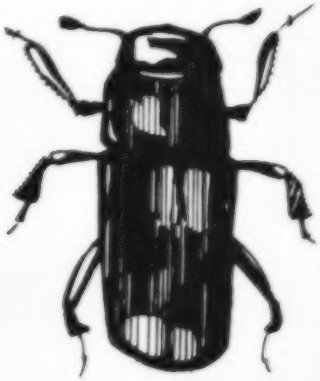
2. _____



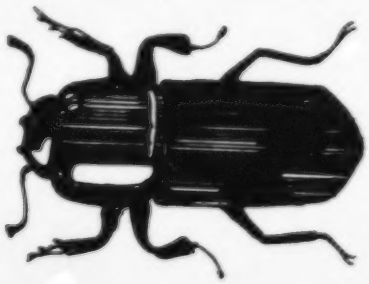
3. _____



4. _____



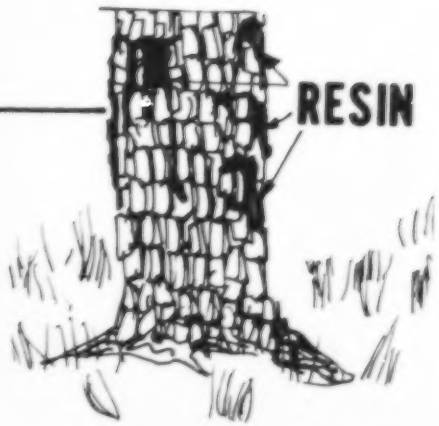
5. _____



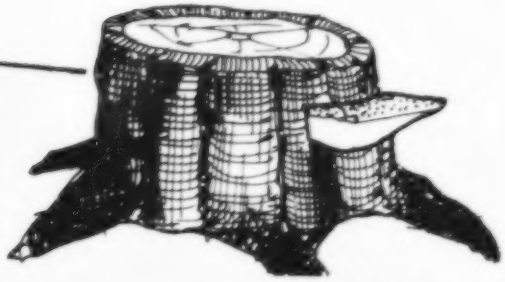
CHECK SHEET

Instructional Objective IX — Identify these diseases.

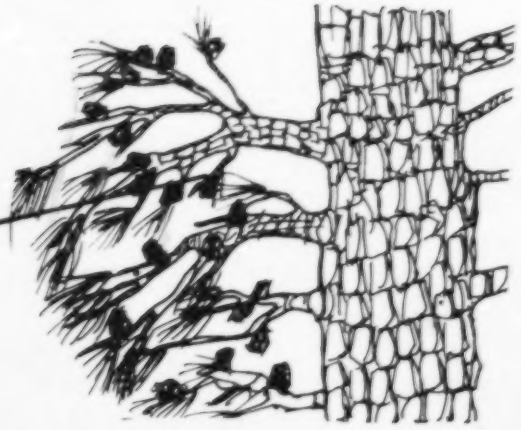
1. _____



2. _____



3. _____



4. _____

CHECK SHEET

Instructional Objective X, Checkpoint

How many annual rings were on your sample? _____

Instructional Objective XI, Checkpoint

The thickness of the pine bark is _____.

12

Form N-5
(Rev. 7/77)
(2.5. M)

APPLICATION FOR FOREST TREE SEEDLINGS

SOUTH CAROLINA STATE COMMISSION OF FORESTRY

P. O. Box 21707, Columbia, S. C. 29221

(No Carbon Necessary)

Do not write in this space.

Order Number _____

Pick-up ___ Truck ___

1. **GENERAL**

Landowner Name _____

Mailing Address _____
(Street or Box No.)

_____
(City & Zip Code)

Trees to be planted in _____ County.

_____ Miles from _____ on _____
(Highway No.)

Telephone Number _____

2. **NURSERIES**

___ Tilghman-Box 235, Wedgefield, S.C. 29168 - Ph. 494-8488

___ Piedmont-Box 38, Salem, S.C. 29676 - Ph. 944-1104

___ Coastal-Box 786, St. George, S.C. 29477 - Ph. 563-3920

___ Ridge-Box 216, Trenton, S.C. 29847 - Ph. 275-4178

3. **SEEDLING ORDER**

SPECIES	Number Seedlings Ordered			Cost Per Thousand	Total Cost
	FIP	ACP	Other		

CHECK IF CHRISTMAS TREE GROWER _____

4. **OWNERSHIP (Check One)**

___ Farmer
___ Other Individual
___ Association/Club
___ Lumber Company
___ Pulp & Paper Company
___ Other Industry
___ School
___ State Forest
___ Other State Land
___ City, Town, Gov.
___ Federal Government
___ Watershed

5. **SHIPPING INSTRUCTIONS** (Fill in only ONE method of shipment)

(Final Date of Shipment to be set by Nurseryperson)

(a) Pick up at Nursery: By Whom _____
(Name) (Address)

Month of desired Pickup: DECEMBER JANUARY FEBRUARY MARCH (Circle One)

(b) Delivery by Nursery Truck: ___ Add $2.00 per thousand for truck delivery to County Seat
(Minimum shipping - $2.00)

Month of desired Truck Shipment: DECEMBER FEBRUARY (Circle One)

NO REFUNDS WILL BE MADE ON ORDERS CANCELLED OR RECEIVED AFTER JANUARY 31.

In accordance with Section 29-12 S.C. Code of Laws, 1952, I certify that these trees will be used only for reforestation purposes.

6. _____ Signed _____
(Date of Application) (Landowner or Agent)

7. _____ _____
(Person Taking Order) (Agency)

(Pink Copy to be Retained by Landowner)

AGRICULTURE – FORESTRY SEEDLINGS

Kit No. 53

STUDENT
LEARNING ACTIVITY GUIDE

Prepared by

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State Department of Education
Office of Vocational Education
Prevocational Education
Columbia, South Carolina 29201

In Cooperation With

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1978

INTRODUCTION

This activity is designed to show students how to order pine seedlings, plant pine seedlings, protect a tree crop, measure forest products, and estimate the timber value of trees.

The ordering and planting of seedlings is a seasonal activity for November (orders), December, January, and February (planting).

GOALS

The student will know the meaning of forestry and will be familiar with the importance of the forest.

The student will fill out correctly an application form for ordering pine seedlings.

The student will heel in, handle and plant pine seedlings properly.

DIRECTIONS

Instruction concerning the meaning of forestry and its importance is contained in this Student Learning Activity Guide.

The instructor will provide the student with an application form for ordering pine seedlings. Follow the instructions given in the Guide for filling out this form. After the completion of the form, give it to your instructor to be recorded on the pine seedling master order.

Plant pine seedlings as soon as possible after they arrive. If impossible to plant within two or three weeks, they should be heeled in. Follow instructions for heeling in, handling and planting seedlings.

MATERIALS

The materials needed for this activity will be available to you during the activity.

PROGRAMMED TEXT

Instructional Objective 1

Given appropriate information, students will identify nine factors which make forests important.

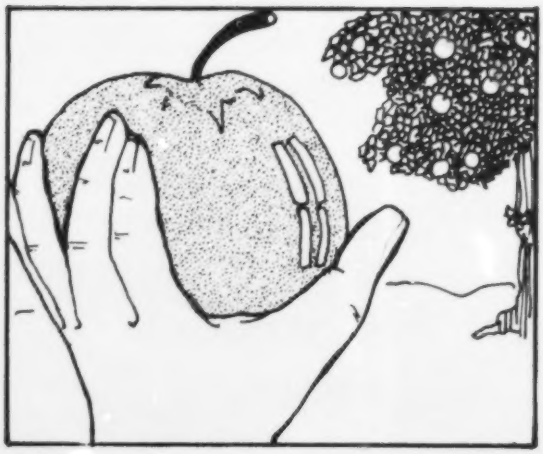
STEP 1 – Forests are a renewable resource because they reproduce.

STEP 2 – Trees serve as protection for much wildlife.

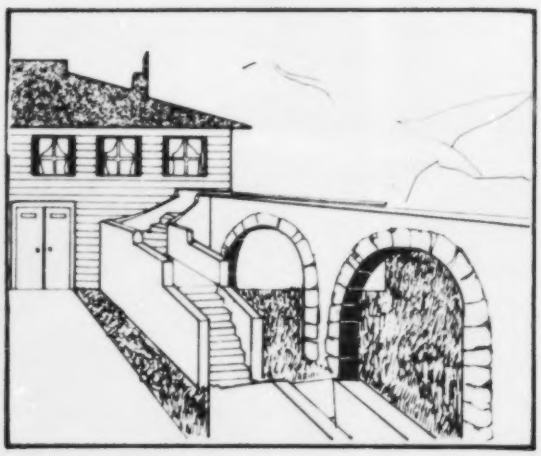
STEP 3 – Forests are constantly growing. Some forests can replace themselves within about 20 years.

STEP 4 – Forestry is an industry that employs many people.

STEP 5 – Forest products provide for human beings fuel,



STEP 6 – food,



STEP 7 – and shelter.

STEP 8 – Harvesting of trees and fruits is a full-time job to many people in South Carolina.

STEP 9 – Marketing of these products provides a source of income for farmers, grocers, truckers and other people connected with this industry.

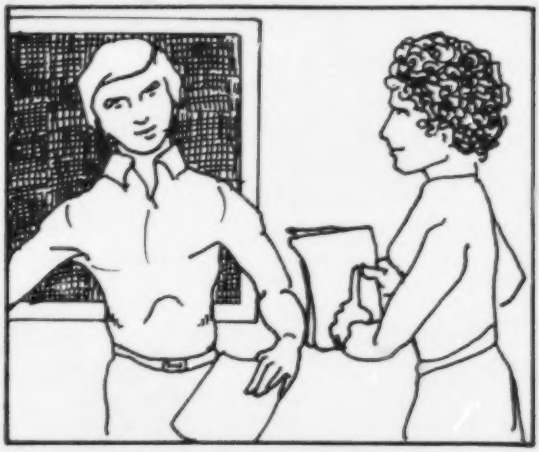
Check Point

On your Check Sheet unscramble these words.

1. tropreudnoic
2. igngwor
3. octorpenit
4. gavetsihnr
5. temirangk
6. esorfyrt
7. lfeu
8. leterhs
9. doof

Instructional Objective 11

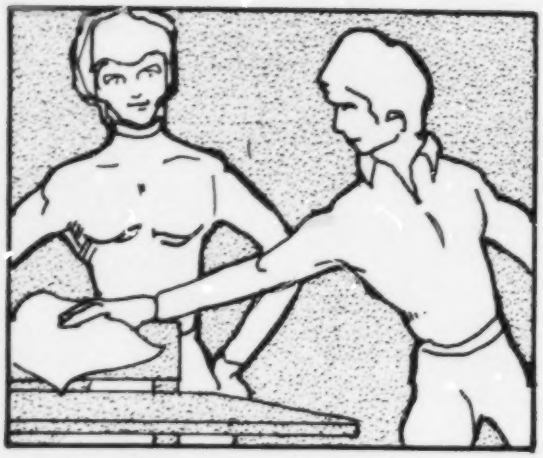
Given instructions and application form, the student will write an application to order pine seedlings for planting.



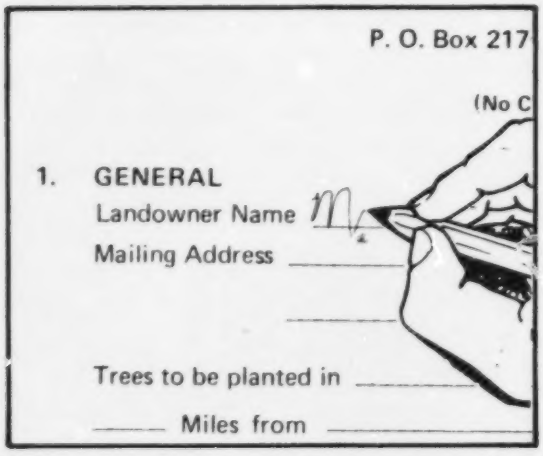
STEP 1 – Get a seedling application form from the instructor.

SPECIES	COST PER * 1,000
**Imp. Coastal Lob.	$ 9.00
Imp. Piedmont Lob.	9.00
Imp. Slash Pine	9.00
Imp. Virginia Pine	9.00
Regular Coastal Lob.	8.00
Longleaf Pine	8.00
Table Mountain Pine	9.00
***White Pine	14.00
Scotch Pine	18.00
Yellow Poplar	20.00
Sweetgum	20.00
Baldcypress	20.00
Black Walnut	25.00

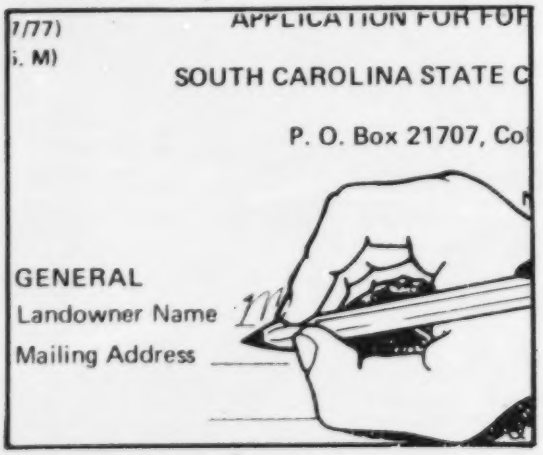
STEP 2 – Review the price list. If you find a tree you would like to plant, write its name on a scrap piece of paper. Or, if you are not sure what these trees look like, they can be found in the encyclopedia in your school library.



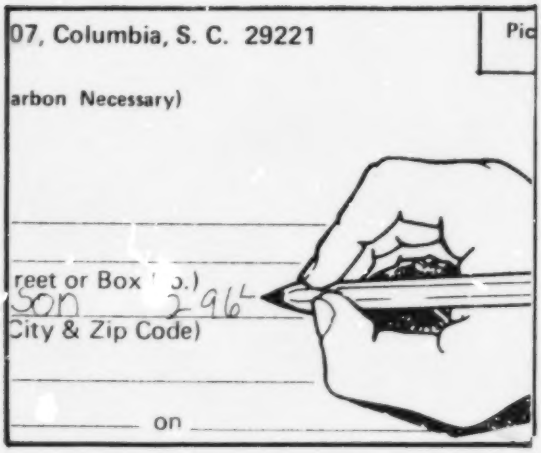
STEP 3 – Place order form on your desk in a proper writing position. Locate No. 1, General.



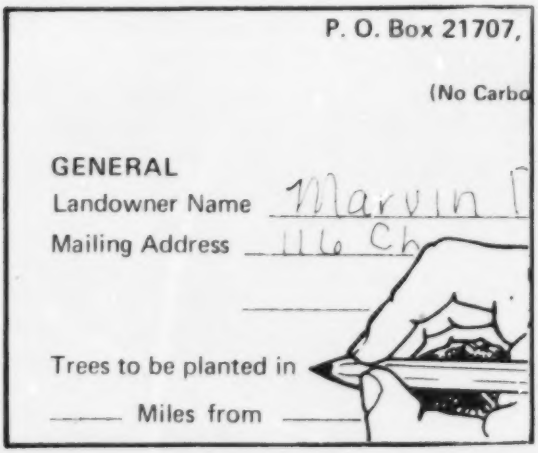
STEP 4 – Print the name of the owner of the land where the trees will be planted. In most cases this will be your school.



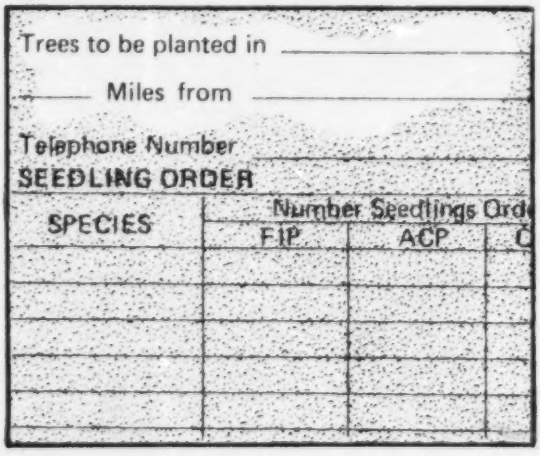
STEP 5 – Under the landowner's name print the street address.



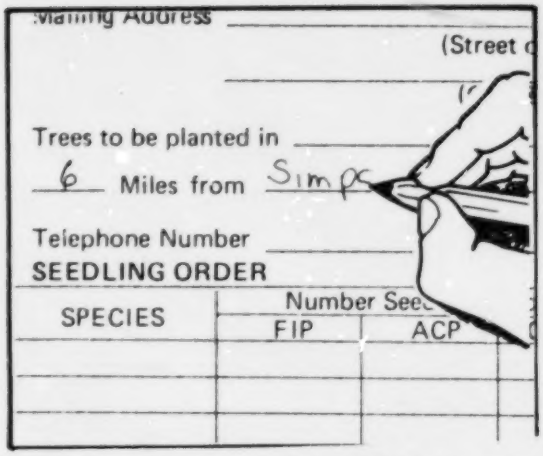
STEP 6 – Under the street address print the name of the city or town, followed by the zip code.



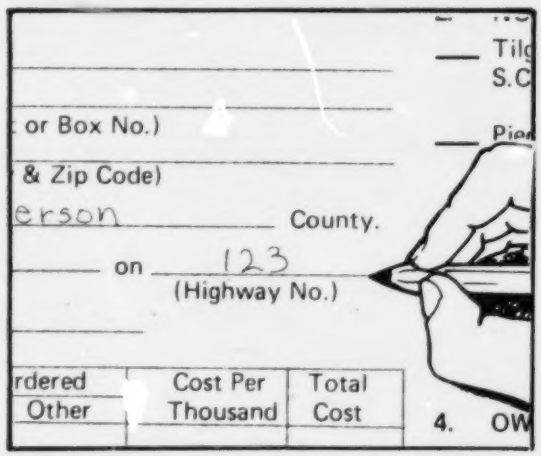
STEP 7 – The next line asks you to print the county in which the trees will be planted. If you do not know, ask your instructor.



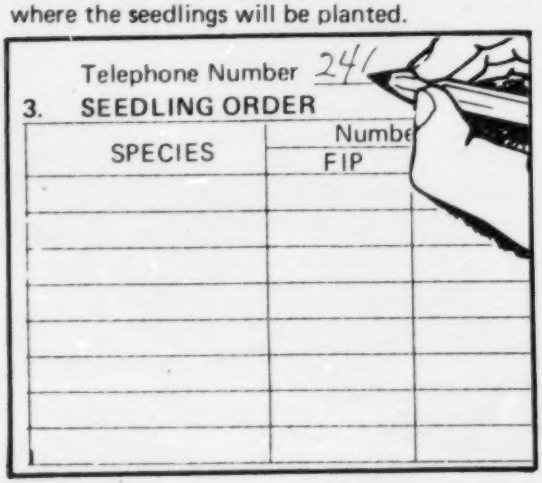
STEP 8 – The next line has three blanks. The first blank asks how many miles the area you will plant is located from a town or landmark.



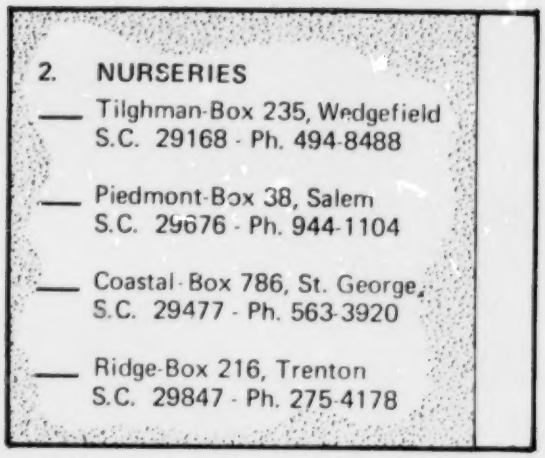
STEP 9 – On the next blank print the town or landmark used to determine the mileage.



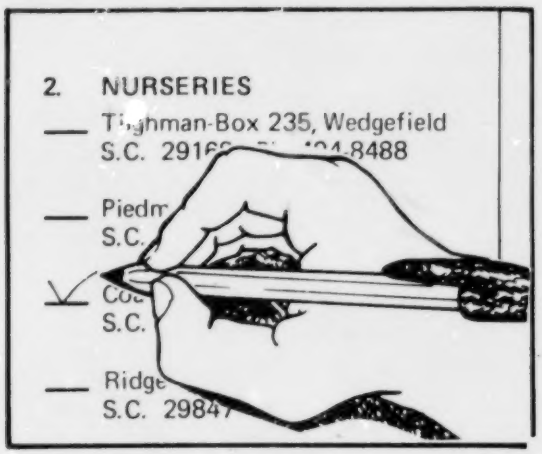
STEP 10 – In the third blank print the number of the highway nearest the land where the seedlings will be planted.



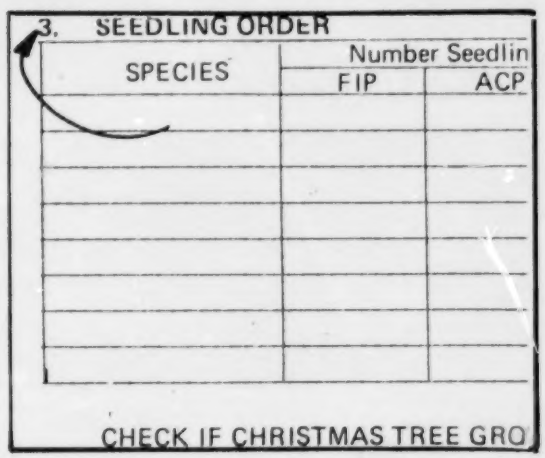
STEP 11 – The bottom line asks for the telephone number of the landowner.



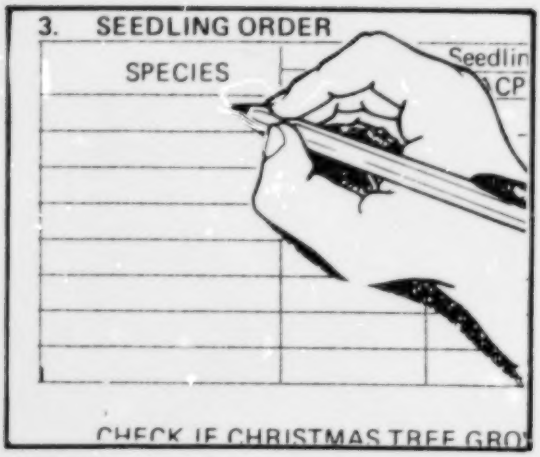
STEP 12 – Find category No. 2, Nurseries.



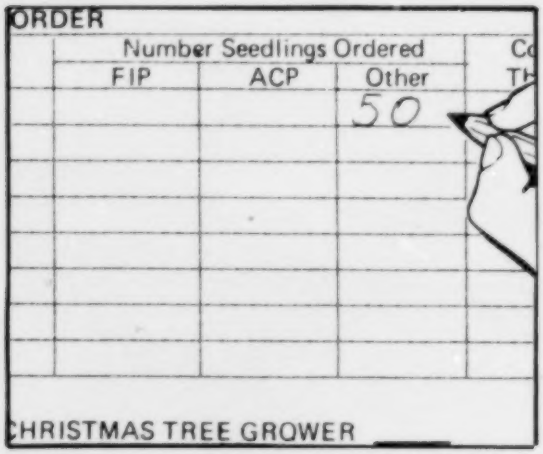
STEP 13 – Check, in the box provided, the nursery closest to your location.



STEP 14 – Find No. 3, Seedling Order.



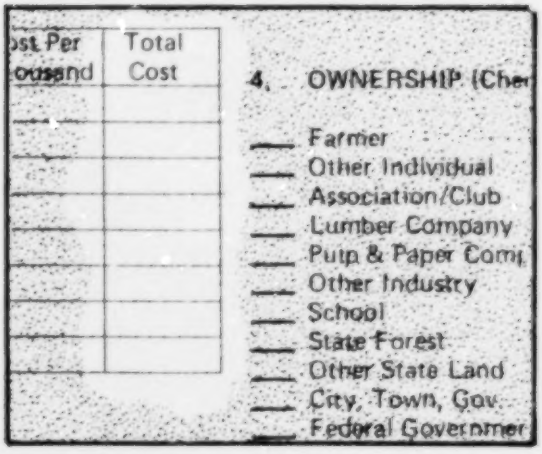
STEP 15 – On the chart print under Species the type tree you are ordering.



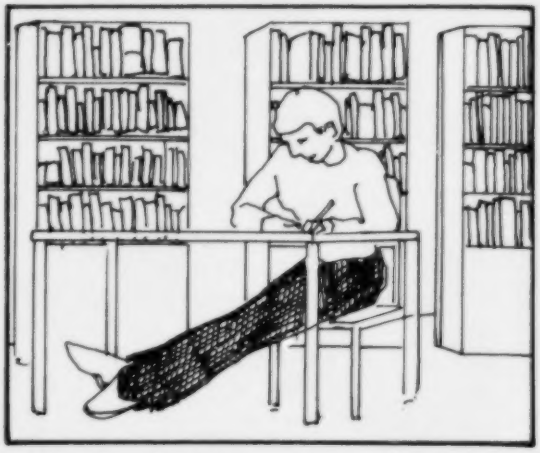
STEP 16 – In the next section, Number Seedlings Ordered, under the "Other" column, put the number 50.

SPECIES	COST PER *-1,000
** Imp. Coastal Lob.	$ 9.00
Imp. Piedmont Lob.	9.00
Imp. Slash Pine	9.00
Imp. Virginia Pine	9.00
Regular Coastal Lob.	8.00
Longleaf Pine	8.00
Table Mountain Pine	9.00
*** White Pine	14.00
Scotch Pine	18.00
Yellow Poplar	20.00
Sweetgum	20.00
Baldcypress	20.00
Black Walnut	25.00

STEP 17 – The next column is for Cost Per 1000. Find this amount on the chart in Step No. 2.

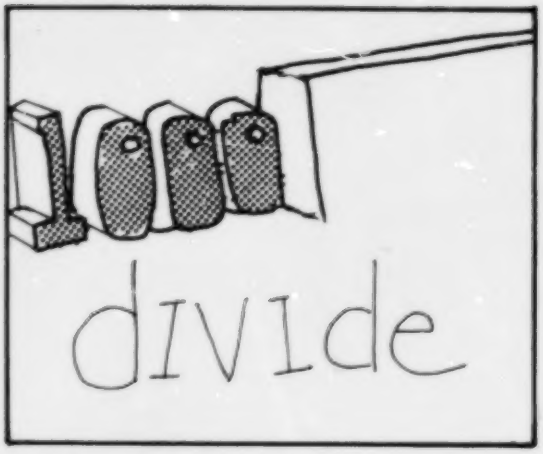


STEP 18 – The last column is for Total Cost. This is determined by a simple math process. Get a piece of scrap paper.

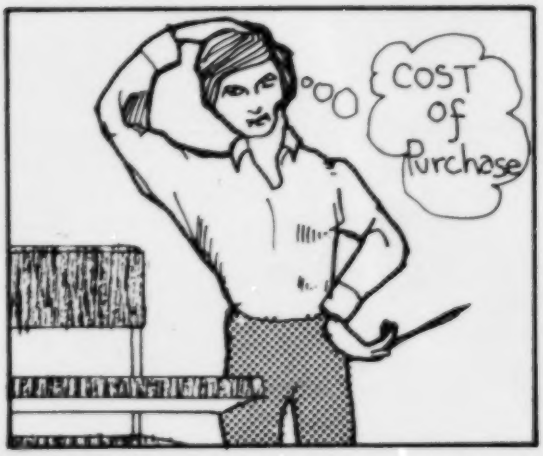


STEP 19 – On this paper write down the cost per 1000 of the trees you wish to order.

STEP 20 – Multiply the cost per 1000 by 50.



STEP 21 – This new number will be divided by 1000.



STEP 22 – The dividend (answer) of this division is the cost of purchase.

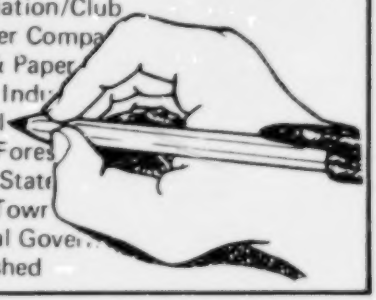
s Ordered Other	Cost Per Thousand	Total Cost

VER

STEP 23 – Enter this figure under the Total Cost column.

4. OWNERSHIP (Check One)

___ Farmer
___ Other Individual
___ Association/Club
___ Lumber Compa
___ Pulp & Paper
___ Other Indu
___ School
___ State Fores
___ Other State
___ City, Towr
___ Federal Gove
___ Watershed



STEP 24 – Locate Number 4, Ownership, and check the box which describes who owns the land.

5. SHIPPING INSTRUCTIONS (Fill in o

(Final Date of Shipment to be se

(a) Pick up at Nursery: By Whom

Month of desired Pickup: D

(b) Delivery by Nursery Truck: ____

(Minimum shipping - $2.00)

Month of desired Truck Shipmen

NO REFUNDS WILL BE M

STEP 25 – Leave Number 5 blank as your instructor will fill this in on the Master Sheet.

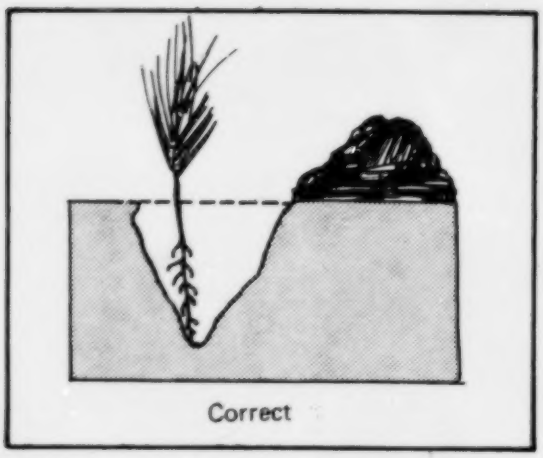
Check Point

Have your instructor sign line 6 of the form and inspect your work for neatness and accuracy.

21

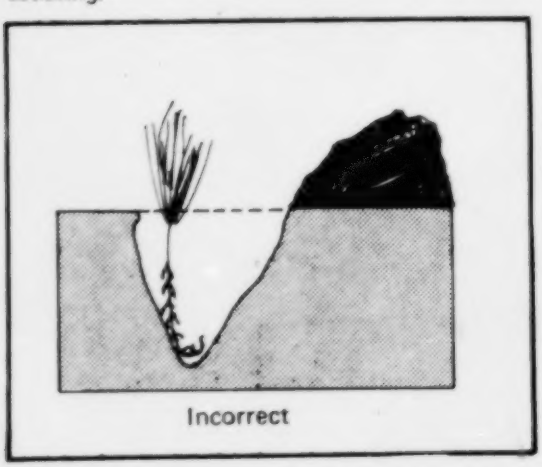
Instructional Objective III

Given appropriate instruction, students will identify the proper depth for planting seedlings.



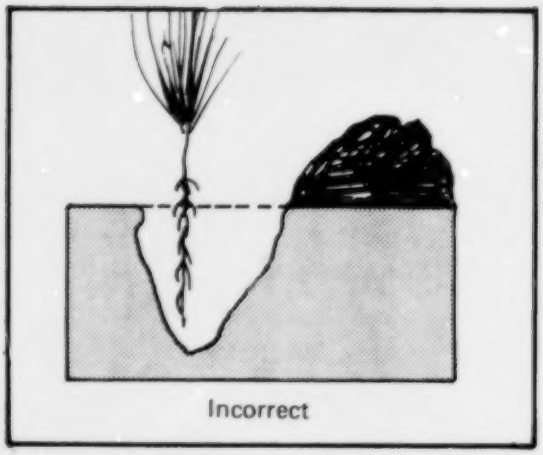
Correct

STEP 1 – Place the seedling in the ground so that the tip of the root touches the bottom of the V-shaped trench. Shake the roots so they will spread; replace the soil around the seedling. This is the proper depth to plant a seedling.



Incorrect

STEP 2 – If a seedling is planted incorrectly, its root system will develop poorly as in the illustration.



Incorrect

STEP 3 – If a seedling is planted too high, its top roots will dry out and cause the plant to die.

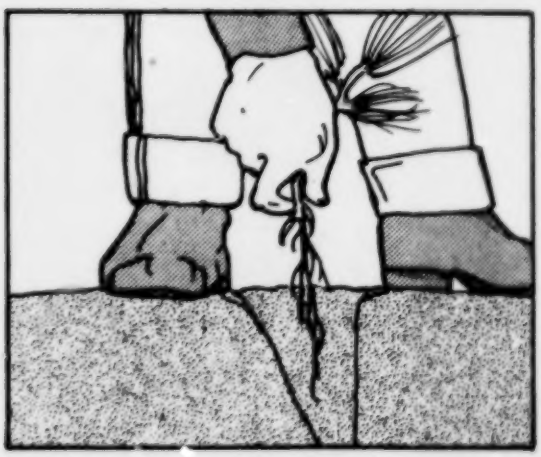
Check Point

On the Check Sheet provided, identify which illustration shows the correct planting depth.

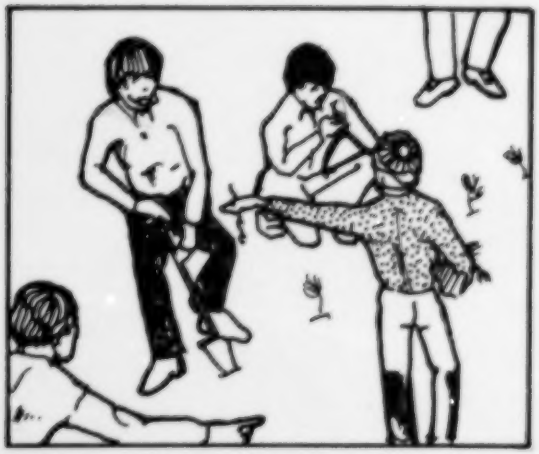
Instructional Objective IV

Given appropriate instruction, students will identify 5 rules for planting.

STEP 1 – Keep roots moist at all times.



STEP 2 – Place seedlings in ground so that roots are straight – not curled up.



STEP 3 – Plant seedlings at correct depth.

STEP 4 – Plant in moist soil and pack soil firmly around roots.

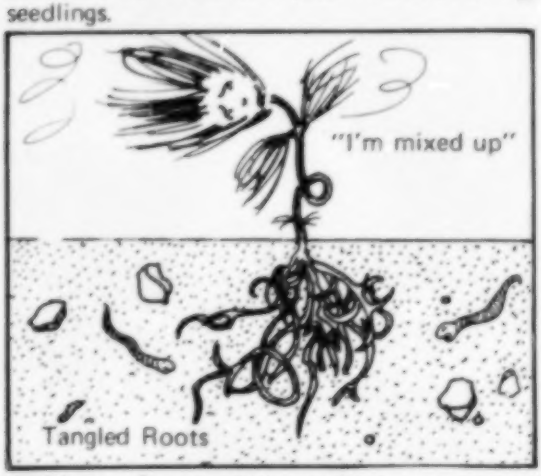
STEP 5 – Protect from fire and other injury.

Check Point

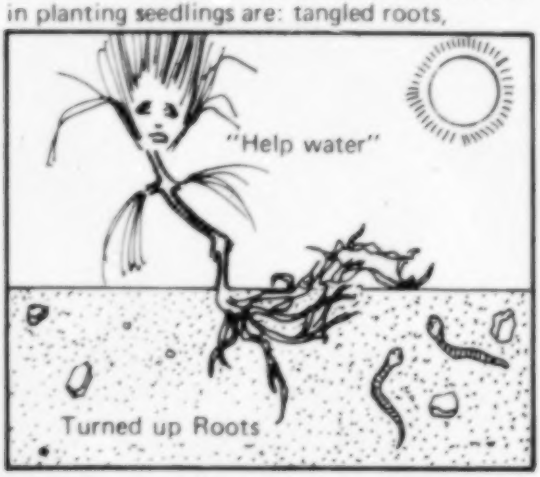
On the Check Sheet provided by the instructor, list 5 rules for successfully planting seedlings.

Instructional Objective

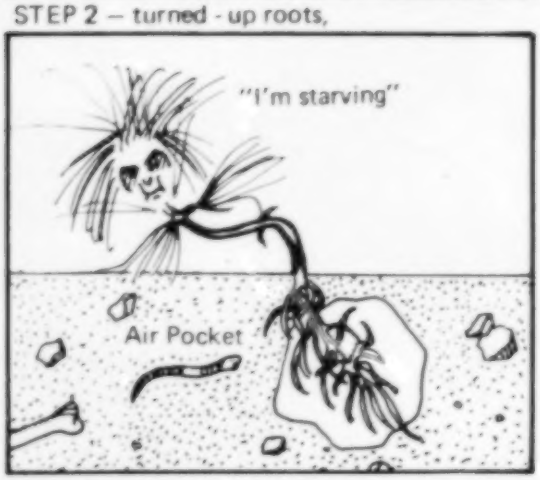
Given appropriate instruction, students will identify 5 common problems in planting seedlings.



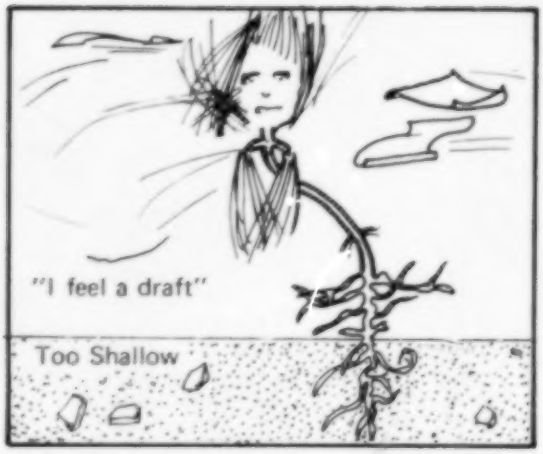
STEP 1 – Some problems often encountered in planting seedlings are: tangled roots,



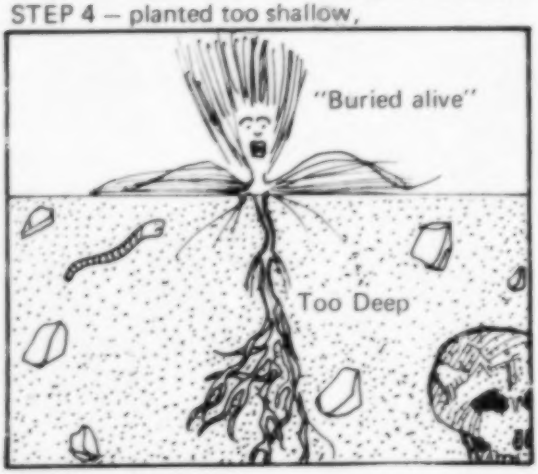
STEP 2 – turned - up roots,



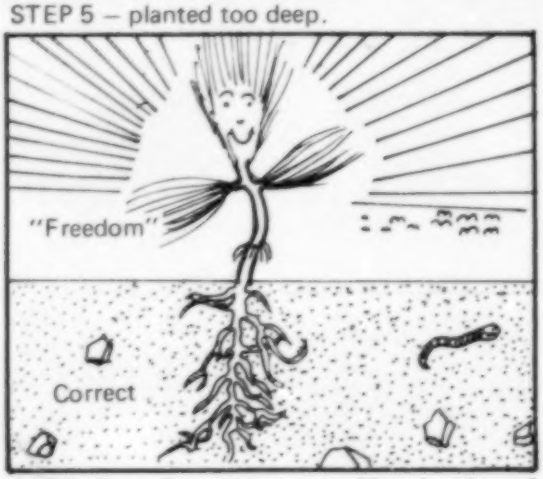
STEP 3 – air pockets,



STEP 4 – planted too shallow,



STEP 5 – planted too deep.



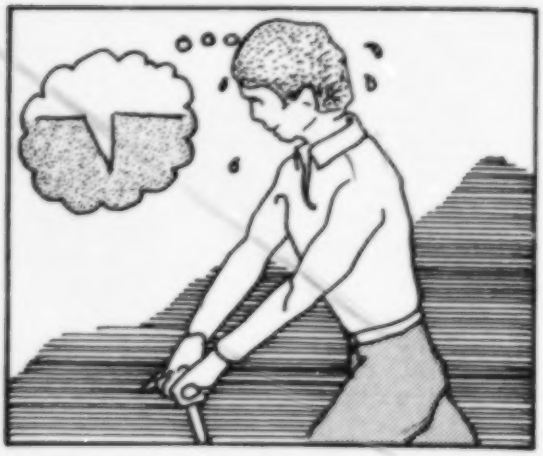
STEP 6 – But when a seedling is planted correctly, it will grow.

Check Point

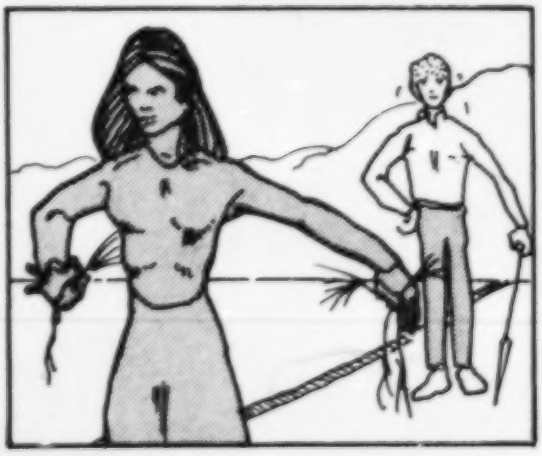
On the Check Sheet list 5 common problems associated with planting seedlings.

Instructional Objective VI

Given appropriate instructions, students will list the procedure to be followed in order to heel in seedlings.

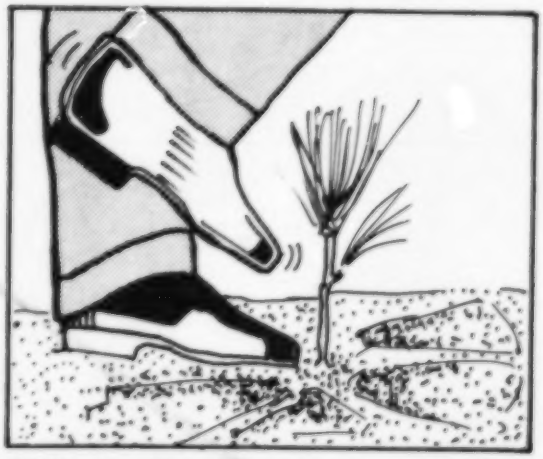


STEP 1 – Dig a V-shaped trench; usually a moist shady place is best.



STEP 2 – Break the bundles of seedlings; spread these evenly in the trench.

STEP 3 – Fill the trench with loose soil. Be sure to water this area well.



STEP 4 – The water will allow the soil to settle, so add some more soil and tap it down firmly with your foot.

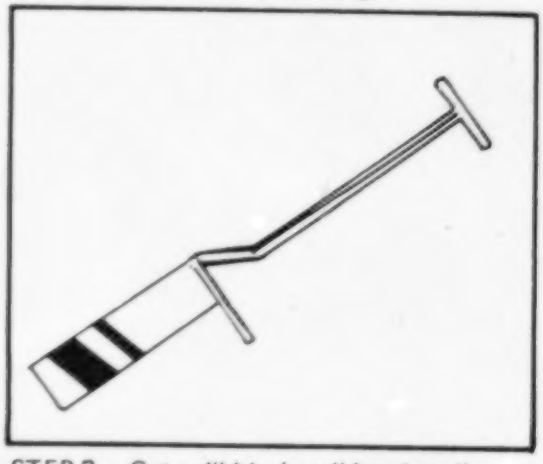
Check Point

On the Check Sheet list the steps to follow in heeling in seedlings.

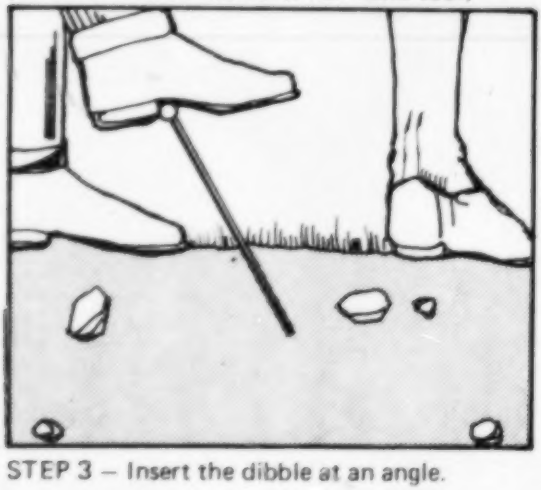
Instructional Objective VII

Given appropriate instructions and seedlings, the students will establish a stand of forest growth by dibble planting.

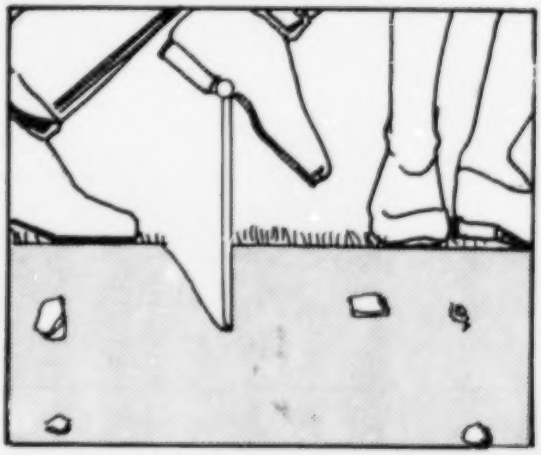
STEP 1 – Gather your seedlings.



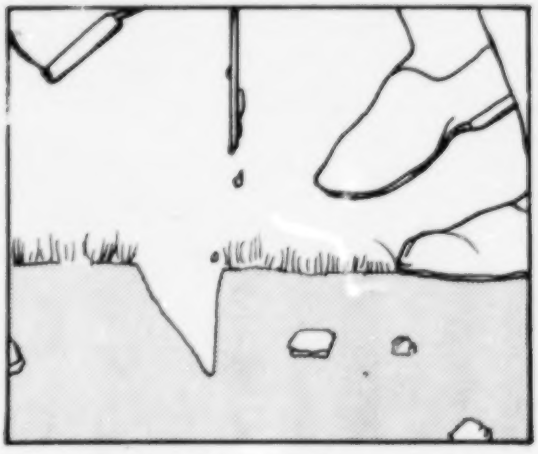
STEP 2 – Get a dibble. (small hand tool)



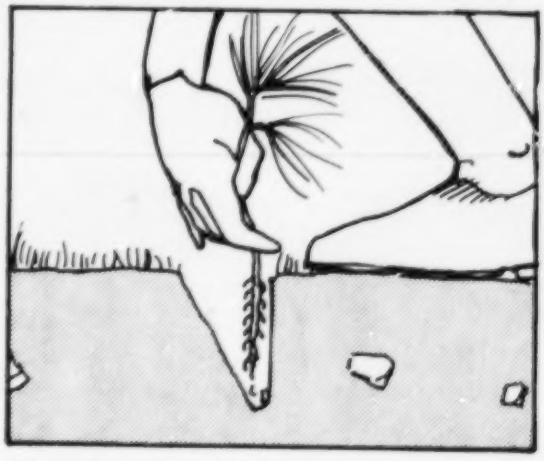
STEP 3 – Insert the dibble at an angle.



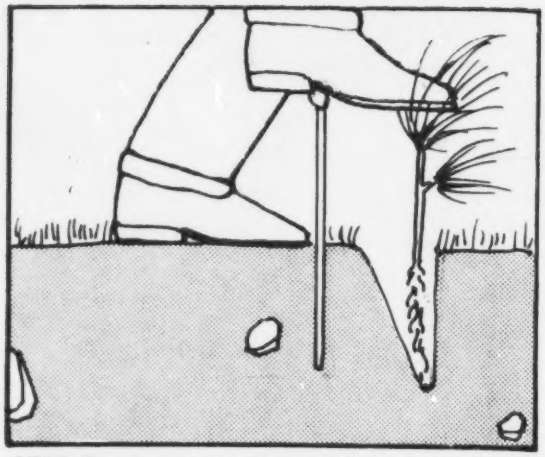
STEP 4 – Push forward to an upright position.



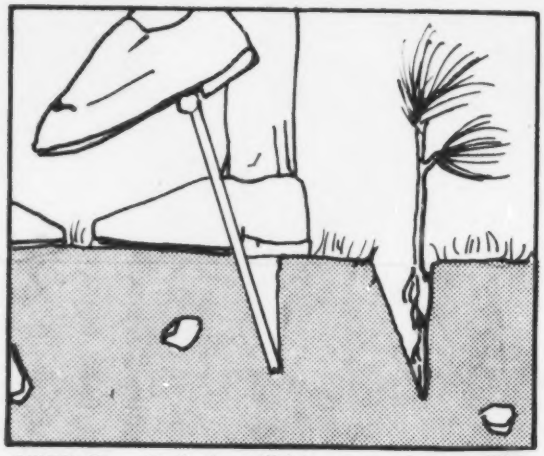
STEP 5 – Remove the dibble.



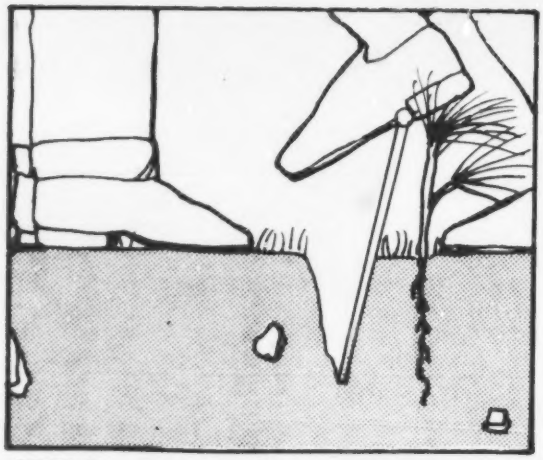
STEP 6 – Place the seedling in the soil at its correct depth.



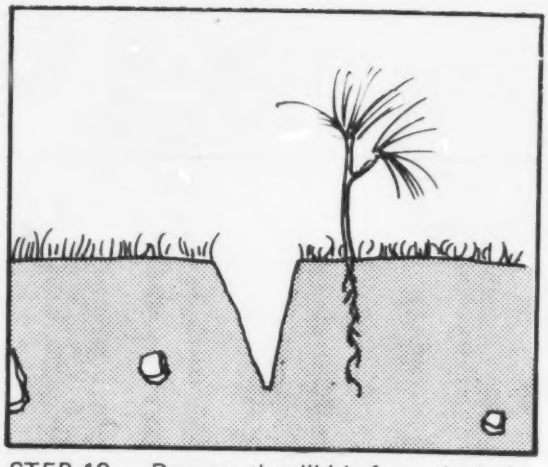
STEP 7 – Insert the dibble 2 inches (5.08 cm) toward you from the seedling.



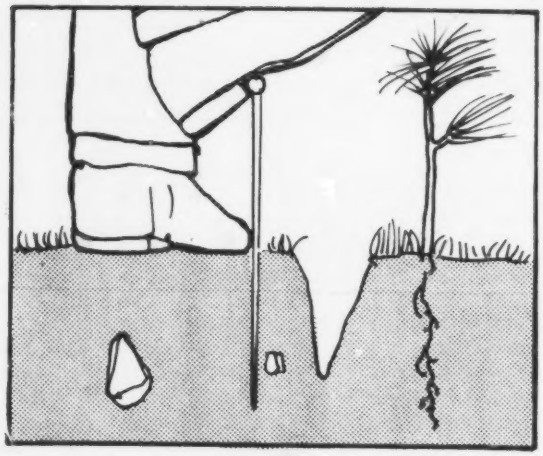
STEP 8 – Pull the dibble toward you. This will make the soil firm at the bottom of the seedling.



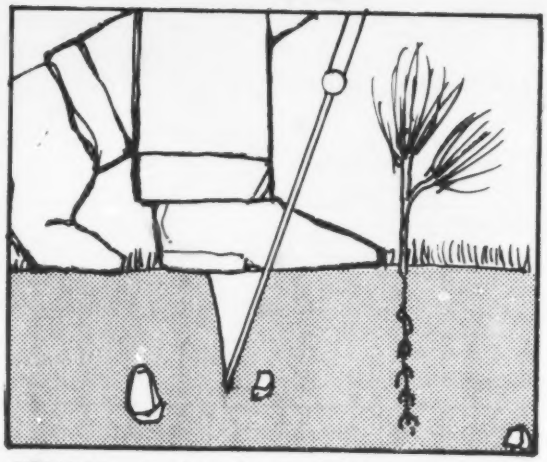
STEP 9 – Push the dibble handle toward the plant.



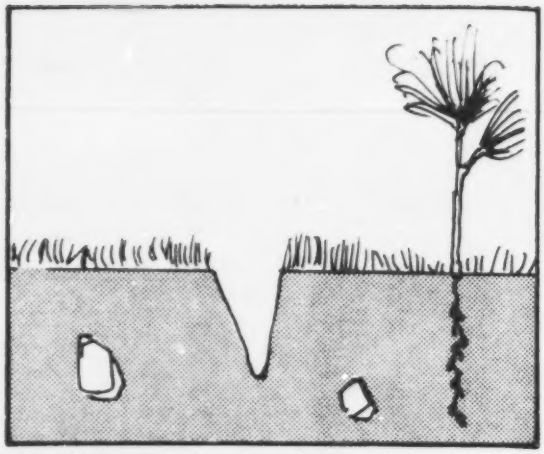
STEP 10 – Remove the dibble from the hole.



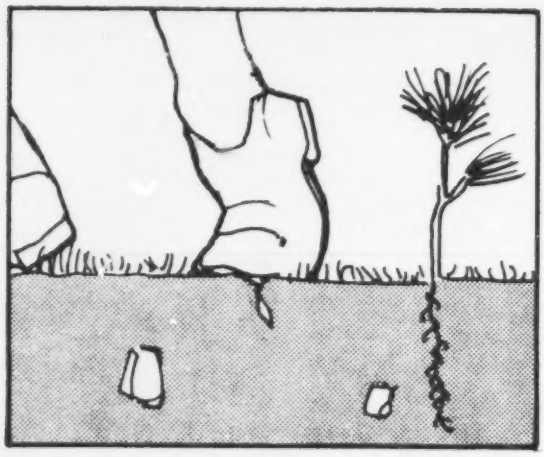
STEP 11 – Insert the dibble 2 inches (5.08 cm) from the last hole.



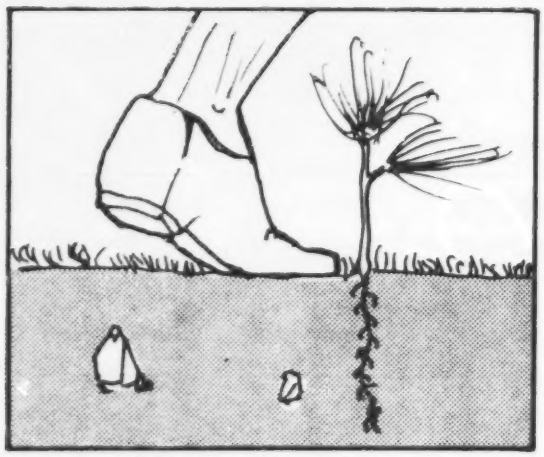
STEP 12 – Push and pull dibble enough to fill hole.



STEP 13 – Remove the dibble.



STEP 14 – Fill in the last hole by stamping the soil down with the heel of your foot.



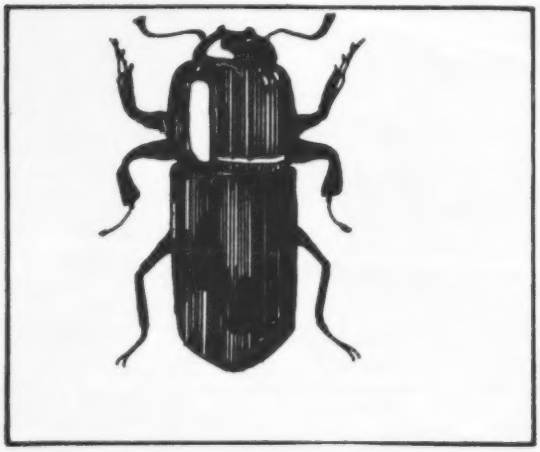
STEP 15 – Firm the soil around the seedling with your foot.

Check Point

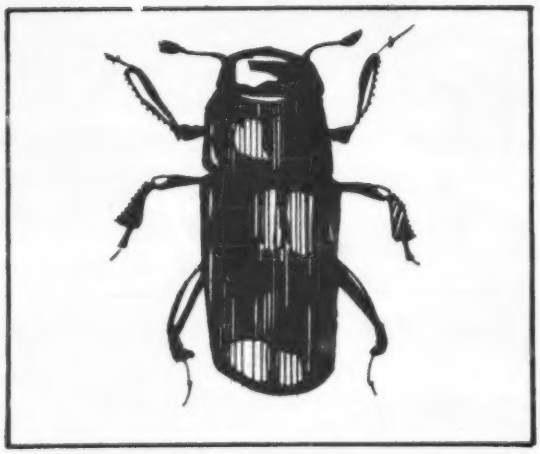
Have your instructor observe you planting your seedlings with the dibble.

Instructional Objective VIII

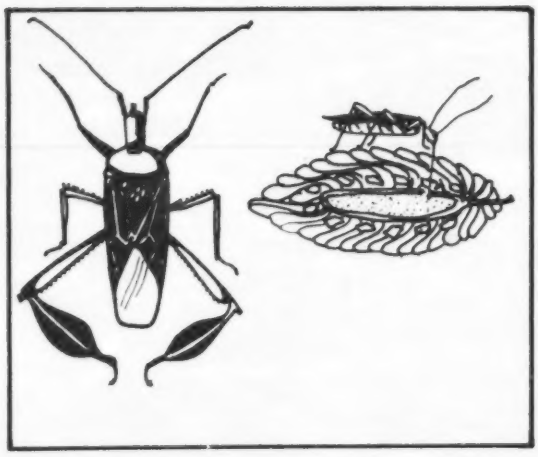
Given appropriate instruction, the student will identify 5 insects which attack southern pine trees.



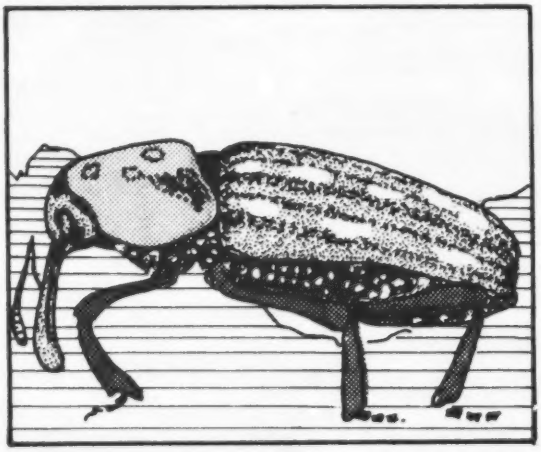
STEP 1 – This is a southern pine beetle. It attacks pine trees by tunneling holes, called pitch tubes, in the tree. These beetles create S-shaped tunnels on the inner bark of trees.



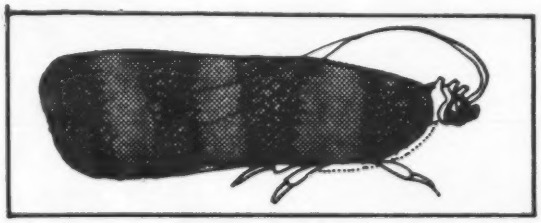
STEP 2 – This is a turpentine beetle. It attacks pine trees at their base by boring large holes called pitch tubes. The needles of infected trees will turn yellow.



STEP 3 – This is a cone bug. This insect feeds on the pine cones of the trees and destroys the seeds needed for reproduction of a tree.



STEP 4 – This horned-looking beetle is called a pine weevil. These insects are attracted to the stumps of cut-off or dead trees.



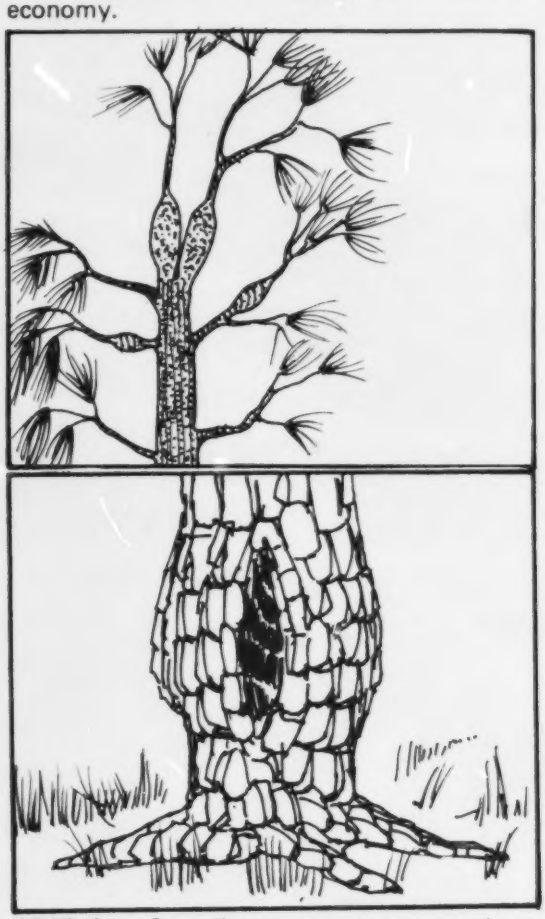
STEP 5 – This insect is a nantucket tip moth. This moth as a young caterpillar will nest in the center of a twig. It will tunnel out of the twig to become a moth. A tree with the insect will have hollow, dead twigs.

Check Point

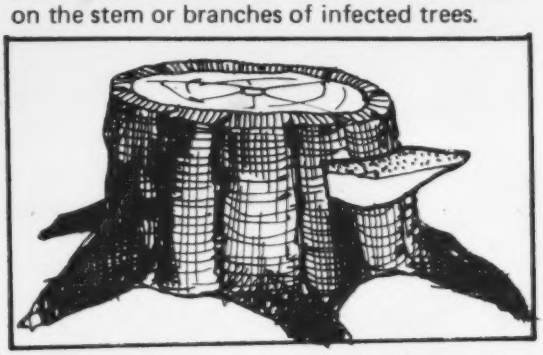
On the Check Sheet identify the insects.

Instructional Objective IX

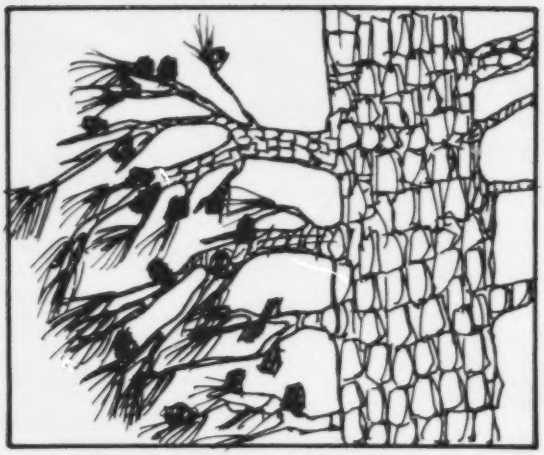
Given appropriate instruction, students will identify diseases which affect southern pine trees. Disease is a major factor in the loss of trees and of their contribution to the economy.



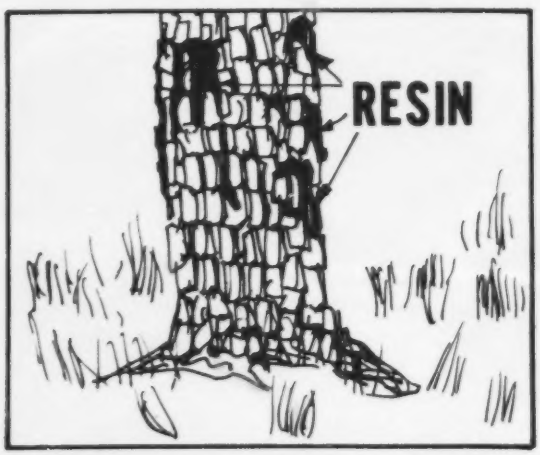
STEP 1 – One disease common to southern pine trees is fusiform rust. Rust forms bulges on the stem or branches of infected trees.



STEP 2 – Root rot is easily identified by rubbery conks which are brown on the top side and white underneath.



STEP 3 — Little - leaf disease affects trees located in poor soil with improper drainage. The most visible symptom of a tree with little -leaf disease is a large crop of undersize pine cones.



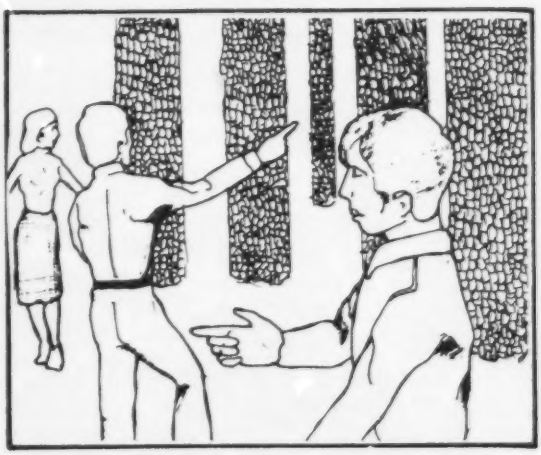
STEP 4 — Pitch canker usually affects fast - growing pine trees. Infected trees will have an excessively heavy flow of resin from the stem or branch canker.

Check Point

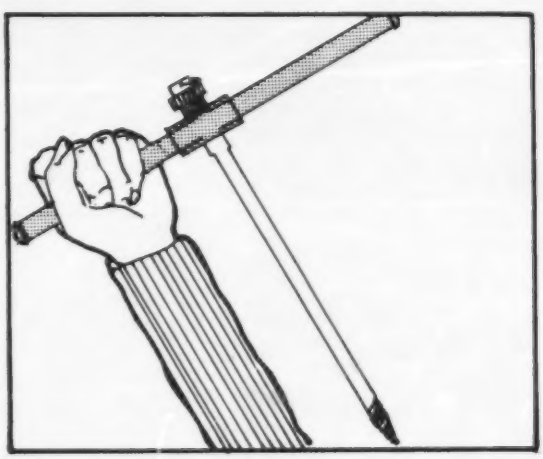
On your Check Sheet identify the four diseases pictured.

Instructional Objective X

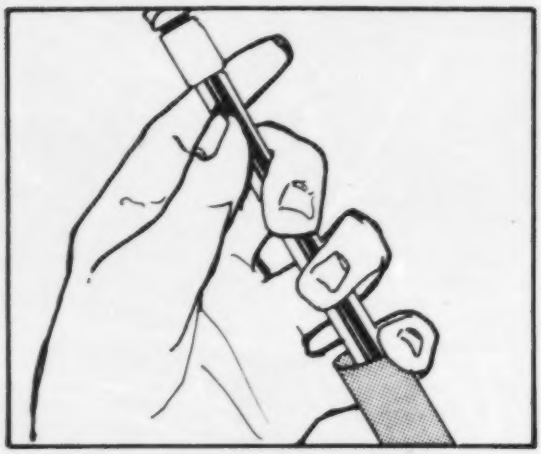
Given equipment and instructions, students will go outside and tap a tree, using an increment borer.



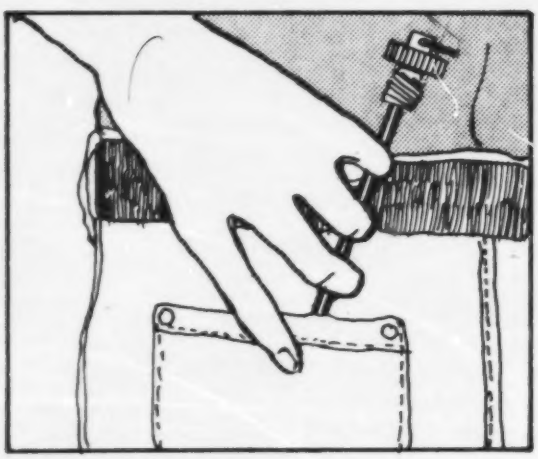
STEP 1 — Locate a pine tree large enough to be bored. Do not select a seedling or a young sapling.



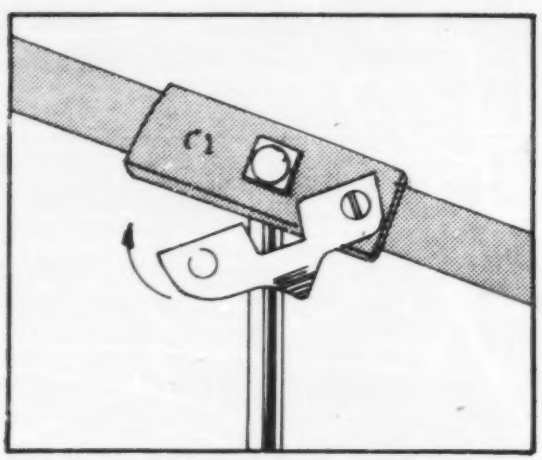
STEP 2 — The increment borer is a device used to extract a portion of a tree to determine its age and growth pattern.



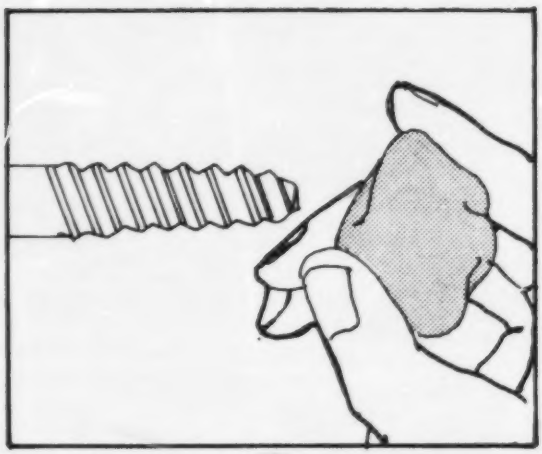
STEP 3 – Carefully remove the extractor and bit from the handle.



STEP 4 – Put the extractor in your pocket.

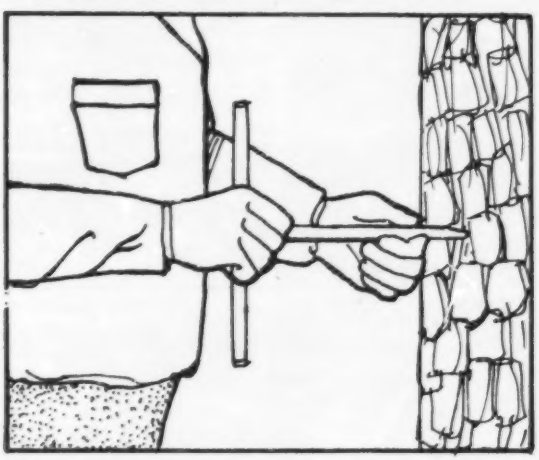


STEP 5 – Put the square end of the bit into the handle. Lock in with the twist-latch.

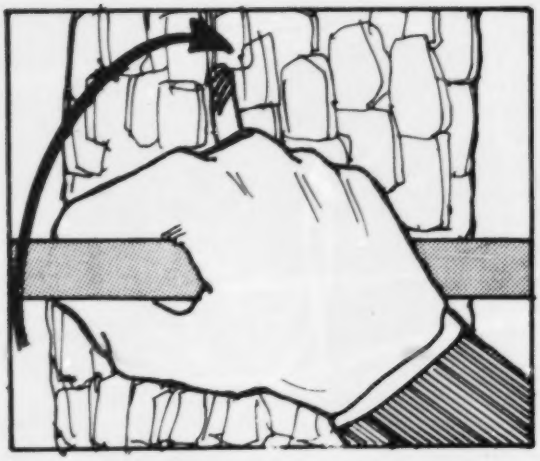


STEP 6 – Lubricate the bit with beeswax.

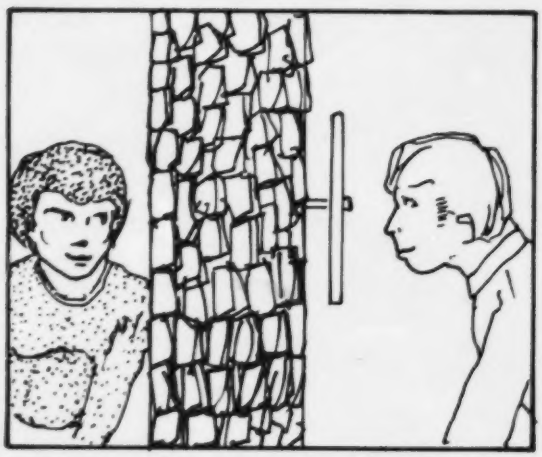
STEP 7 – Make sure the bit is not plugged. Do not push extractor against the cutting edge. Use a twig, a wooden dowel, or a plastic rod to push out anything in the way.



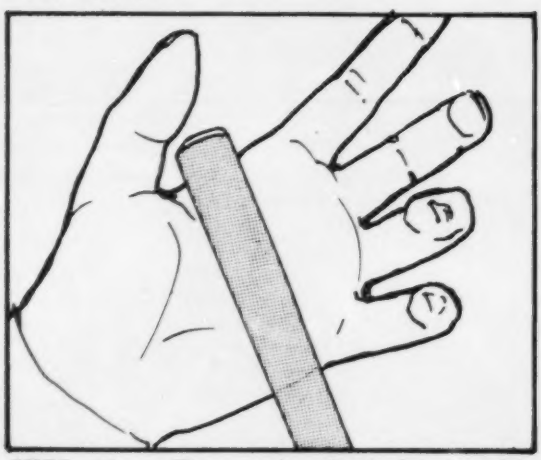
STEP 8 – Place the bit against the bark, preferably in a fissure (crack), where bark is the thinnest.



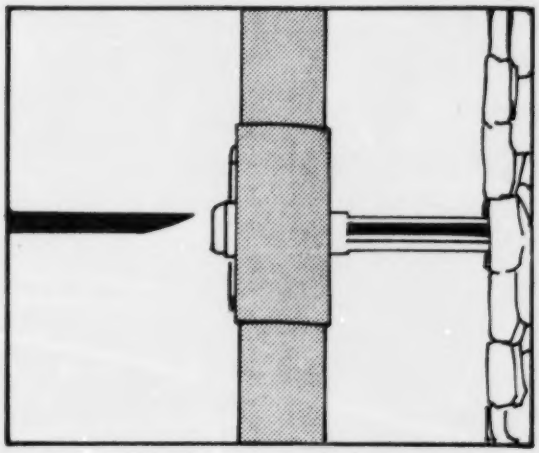
STEP 9 – Push on the handle to exert pressure against the tree and, at the same time, rotate the bit and handle to the right.



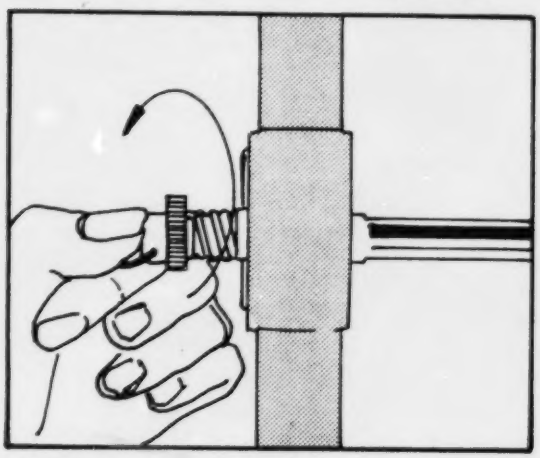
STEP 10 – Bit threads should soon go into the wood. You should aim to bore through the tree center.



STEP 11 – Then, using both hands with palms open, twist in the bit to the desired depth or half way through the tree.



STEP 12 – Insert extractor carefully, concave side up like this "⌒". Push in full length.



STEP 13 – Twist handle one-half turn to left. This breaks the core loose from the tree and also turns the extractor to the concave-side-down position, like this "⌣".

STEP 14 – Grasp extractor by the ring end, pull steady and straight. Your core should come out, resting in the extractor channel.

STEP 15 – Make your annual ring count and record on your Check Sheet.

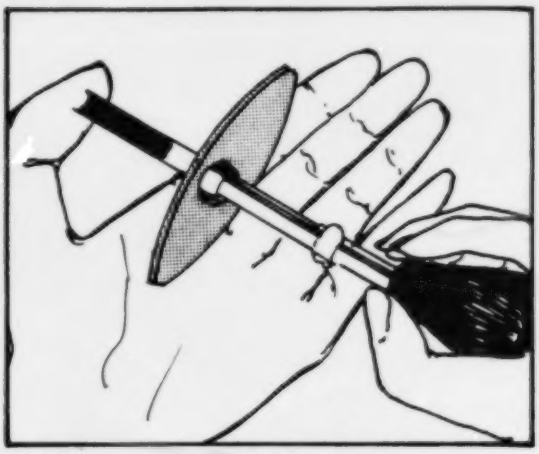
STEP 16 – Twist the bit and remove it from the tree. Clean the bit by spraying with silicone spray; replace it in the handle and lock in with extractor.

Check Point

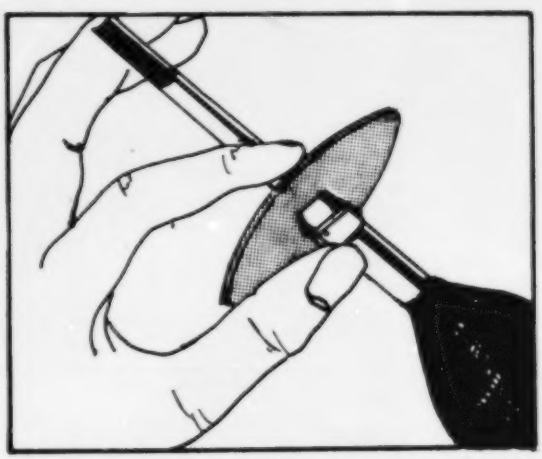
Did you record the number of annual rings of the tree on your Check Sheet?

Instructional Objective XI

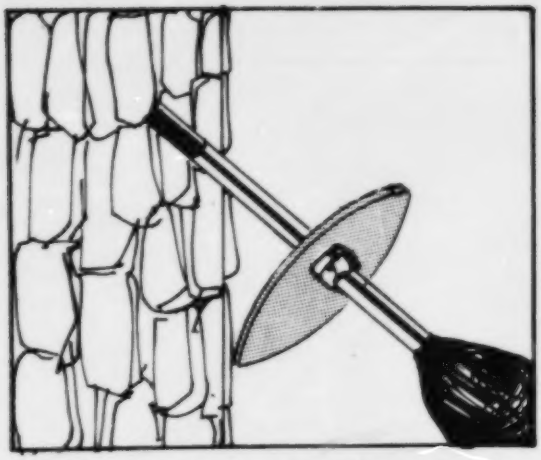
Given equipment and instructions, students will measure the bark thickness on the same tree which was bored, using a bark-thickness gauge.



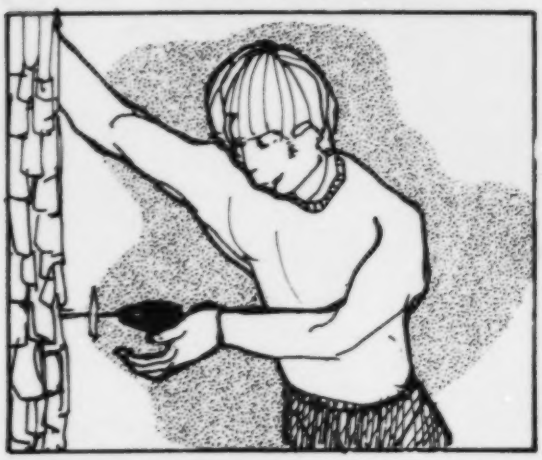
STEP 1 – Pick up the bark-thickness gauge.



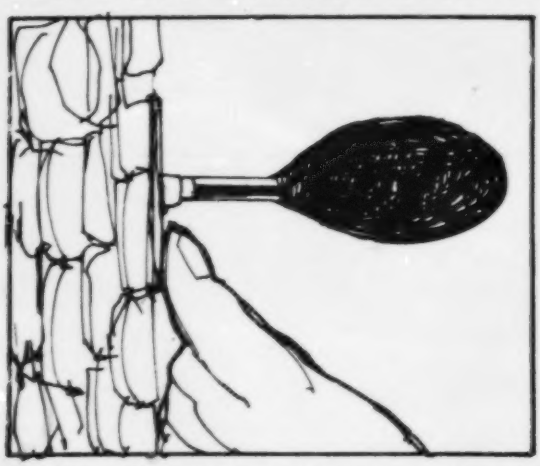
STEP 2 – Push the T-bar up to the handle of the bark-thickness gauge.



STEP 3 – Put the tip of the blade next to the bark of the tree which you just bored.



STEP 4 – Push the tool by the handle about 1 inch–1½ inches (2.54–3.81 cm) into the tree or until you hit the hardwood of the tree.



STEP 5 – Slide the T-bar down the shaft until it touches the bark.

STEP 6 – Remove the bark-thickness gauge from the tree.

STEP 7 – Read the number indicated on the scale between the handle and T-bar.

Check Point

Record this reading on your Check Sheet.

452.364-010 FORESTER AIDE (forestry) forest technician.

Compiles data pertaining to size, content, condition, and other characteristics of forest tracts, under direction of FORESTER (profess. & kin.); and leads workers in forest propagation, fire prevention and suppression, and facilities maintenance: Traverses forest in designated pattern to gather basic forest data, such as topographical features, species and population of trees, wood units available for harvest, disease and insect damage, tree seedling mortality, and conditions constituting fire danger. Marks trees of specified specie, condition, and size for thinning or logging. Collects and records data from instruments, such as rain gage, thermometer, stream-flow recorder, and soil moisture gage. Holds stadia rod, clears survey line, measures distances, records survey data, and performs related duties to assist in surveying property lines, timber sale boundaries, and road and recreation sites. Trains and leads conservation workers in seasonal activities, such as planting tree seedlings, collecting seed-cones, suppressing fires, cleaning and maintaining recreational facilities, and clearing fire breaks and access roads. Gives instructions to visitors of forest, and enforces camping, vehicle use, fire building, sanitation, and other forest regulations.

452.367-014 FIRE RANGER (forestry)

Patrols assigned area of forest to locate and report fires and hazardous conditions and to insure compliance with fire regulations by travelers and campers: Hikes or drives to vista points to scan for fires and unusual or dangerous conditions. Reports findings and receives and relays emergency calls, using telephone or two-way radio. Visits camping sites to inspect activities of campers and insure compliance with forest use and fire regulations. Gives instructions regarding sanitation, fire, and related forest regulations. Extinguishes smaller fires with portable extinguisher, shovel, and ax. Serves as crew leader for larger fires. Renders assistance or first aid to lost or injured persons. Participates in search for lost travelers or campers.

452.687-010 FOREST WORKER (forestry)

Performs variety of tasks to reforest and protect timber tracts and maintain forest facilities, such as roads and campsites: Plants tree seedlings in specified pattern, using mattock, planting hoe or *dibble.* Cuts out diseased, weak, or undesirable trees, and prunes limbs of young trees to deter knot growth, using handsaw, powersaw, and pruning tools. Fells trees, clears brush from fire breaks, and extinguishes flames and embers to suppress forest fires, using chainsaw, shovel, and engine-driven or hand pumps. Clears and piles brush, limbs, and other debris from roadsides, fire trails, and camping areas, using ax, mattock, or brush hook. Sprays or injects trees, brush, and weeds with herbicides, using hand or powered sprayers or tree injector tool. Erects signs and fences, using posthole digger, shovel, tamper, or other handtools. Replenishes firewood and other supplies, and cleans kitchens, restrooms, and campsites or recreational facilities. Holds measuring tape or survey rod, carries and sets stakes, clears brush from sighting line, and performs related tasks to assist forest survey crew.

452.687-018 TREE PLANTER (forestry)

Plants seedling trees to reforest timber lands or Christmas tree farms: Digs planting hole at predetermined spaced interval, using mattock-like tool or *dibble.* Places seedling in hole and packs soil around plant, using foot or planting tool.